Science Communication: Giving Group Meeting

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Created by Anna Burkart Sadusky, Ph.D.
NIH Science Skills Boot Camp
Monday, June 27, 2011

Know your venue. Know your audience.

- **Small group (One PI)**
  - **Informal – round table discussion by one individual or multiple participants**
  - **Formal – powerpoint presentation**

- **Large group (Multiple PI's)**
  - **Formal – powerpoint presentation**

➢**Talk to your mentor to see what type of group meeting presentation you should prepare**

Organization of a Science Talk

- **Title Slide**
- **Introduction** (state a problem, question or a hypothesis)
- **Methods** (consider audience members with different expertise)
- **Experiments/Results/Data**
- **Discussion and Conclusion** (progress on the problem, question or hypothesis)
- **Acknowledgements Slide**
- **Questions?**

For longer talks, try an outline

Charles Dickens
Oliver Twist

CHAPTER I

TREATS OF THE PLACE WHERE OLIVER TWIST WAS BORN; AND OF THE CIRCUMSTANCES ATTENDING HIS BIRTH

Outline

1. The zebrafish model, Nodal signaling, translational uses
2. Mxtx2: a key upstream regulator of mesendoderm
3. Defining gene regulatory networks in zebrafish

Title Slide

Concise Title for Talk

Your name
Your affiliation (lab/school/institute)
The date (optional)

Introduction

The content:

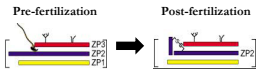
- **What are you investigating?**
- **Why are you interested in this?**
- **Why should we be interested?**

Introduction

The content:

- What are you investigating?
- Why are you interested in this?
- Why should we be interested?
- Problem, question or hypothesis

Slides with cartoons and images are helpful



Hoodbhoy T and Dean J. *Reproduction* 2004 127 (417-422).

If showing published data, make sure you cite the reference!!!

Methods

- What approach did you take to address your problem?
- How is it unique from previous approaches?
- How did you optimize conditions?
- Did you troubleshoot?

Example Methods Slide – DNA microinjection into mouse oocytes

1. Ovaries are harvested from 12-14d FVB mice

http://www.criver.com

2. Follicles are punctured to isolate oocytes

3. DNA is microinjected into GV

http://www.research.uci.edu/tmf/dnaMicro.htm

4. Injected oocytes are incubated at 37 C with 5% CO_2 for ~40hrs

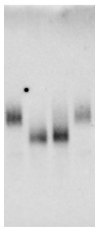
http://med.uvm.edu

5. Injected oocytes are fixed, stained with antibody against CGP, LCA-FITC, and Hoechst, and visualized by confocal microscopy

Results

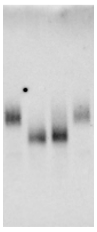
- Be brief and clear
  - Remember your audience
  - Be selective
- Present your work as a story
- Talk the audience through your data
  - Figures
  - Graphs
  - Gels
- Everything must be labeled
- Put YOUR conclusion on each slide

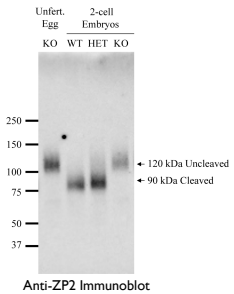
Results – Labeling figures



Results – Labeling figures

Better figure:

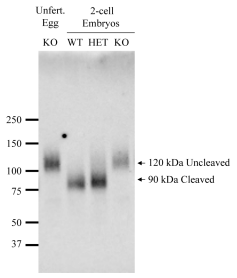




Anti-ZP2 Immunoblot

Even Better figure:

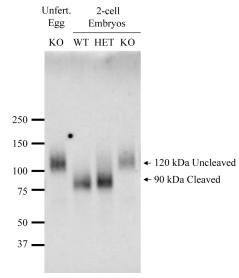
Gene Knockout (KO) Prevents ZP2 Cleavage



Anti-ZP2 Immunoblot

Using segues:

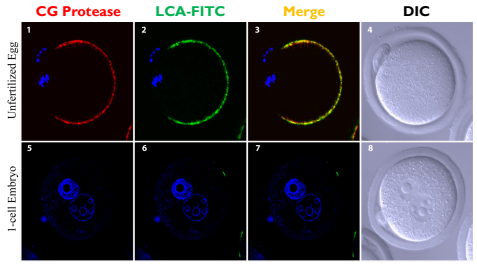
Gene Knockout (KO) Prevents ZP2 Cleavage



Anti-ZP2 Immunoblot

How does my gene of interest interact with the ZP2 cleavage apparatus?

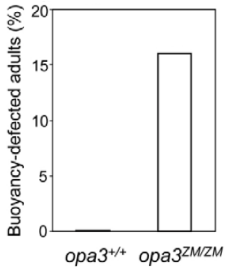
Results – Labeling figures cont.



Use color appropriately!!!

Results – Mind your Ps and Ns

"Recessive mutation of *opa3* causes buoyancy defects"



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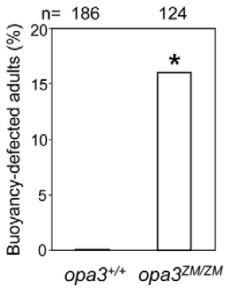


*: $p < 10^{-6}$

Results – Mind your Ps and Ns

Independent variable is discrete and dependent variable is discrete (e.g., student age vs. student test score)

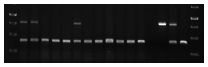
chi-squared test
http://people.ku.edu/~preacher/chisq/chisq.htm

Independent variable is discreteand dependent variable is continuous: (e.g., student age vs. student height)

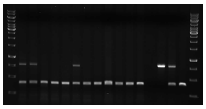
t-test
http://www.physics.csbsju.edu/stats/t-test.html

Results – Cropping and simplifying figures

Show this:



Not this:



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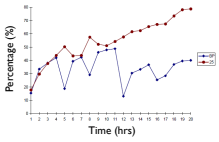

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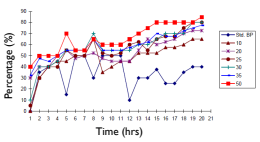


Results – Tables

Table 6. *Demographic characteristics of children with full syndrome autism, by older and younger birth cohorts, Autism Epidemiology Study.*

	Birth Year 1983-85 (N=100)	Birth Year 1993-95 (N=161)	
Characteristic	**Percentage**	**Percentage**	**p-value**
Male sex	90.4%	83.7%	0.08
Race/Ethnicity*:			
White	68.3%	78.3%	0.12
African-American	8.9%	7.4%	0.68
Asian/Pacific Islander	19.5%	14.5%	0.40
Native American	3.5%	3.0%	0.82
Hispanic	27.6%	39.0%	0.06
Parent educational level:			
Father with high school diploma or higher	87.0%	77.6%	0.06
Father with college associate's degree or higher	40.3%	38.7%	0.81
Mother with high school diploma or higher	86.5%	89.1%	0.54
Mother with college associate's degree or higher	35.5%	33.3%	0.70

http://www.dds.ca.gov/Autism/docs/5study_aims_4-6.pdf

Tell a story, but not a mystery

Clear communication trumps historical order

Historical Story

- I started working on X, then switched to Y
- When working on Y, I accidently switched samples, revealing Z.

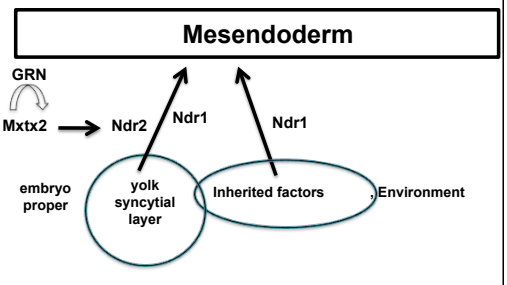
Communicative Story

- The Smith lab is interested in Y, which I am working on.
- An open question about Y is whether Z or Q. I will show you how I found Z to be the answer with the help of a fortuitous accident.

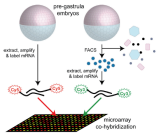
Summary/Conclusions

- **Condense major results and their implications into bullet points**
- **Connect back to introduction**
- **Limit number of points**
- **If you have a model, present in cartoon form (optional)**

Summary for a short talk

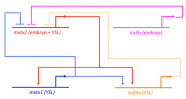


Summary for a long talk



Embryonic expression profiling:
Assembled two valuable gene lists and many candidate TFs

Functional screens of the YSL gene list:
Uncovered Mxtx2's essential role in activating Ndr2
Discovered that non-embryonic Ndrs are essential



Forays into GRN assembly:
A GRN that can explain Mxtx2's dynamic expression Nanostring to bypass GRN assembly bottleneck?

Acknowledgements

List the names of people who helped you

- **Your mentor(s)**
- **Lab members**
- **Collaborators**
- **People who provided reagents**
- **Funding source**

How many slides do you need?

a. **1 slide/ 30 seconds**
b. **1 slide/ 1 minute**
c. **1 slide/ 2 minutes**
d. **It depends**

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Tips for Slide Preparation - Color

Color Choice:

Best choices for good visibility:

Dark colors on white or light background
Dark colors on white or light background

White or yellow on dark background

Never use yellow on white background

Avoid using blue/red on a dark background

Tips for Slide Preparation - Fonts

- Use large, clear font
- 14-16 point minimum (this is 28)
- Small fonts are hard to see (12 point)
- Even smaller fonts are impossible to see (8 point)
- Fancy fonts are hard to read
- **Bold increases readability**
- AVOID USING ALL CAPITAL LETTERS BECAUSE IT'S MUCH HARDER TO READ

Tips for Slide Preparation - Text

- **Rule #1: Limit text**
- **Use bullet points**
- **No paragraphs**
- **Consider bringing in text one line at a time**
- **All text must be readable**
- **Check for typos**

Dealing with Questions

- Be prepared for interruptions
- Clarify the question if you don't understand
- Pause and think before you answer
- Be polite
- Keep your answers brief
- It's OK not to know the answer – do not try to make something up!

Helpful hints:

- Practice! Practice! Practice!
- Memorize your first few slides
- Take deep breaths
- Bring a water bottle
- Bring your lab notebook
- Remember: you are the expert on your own project!

Thanks!

If you have any questions, feel free to contact me:

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Bethesda Campus

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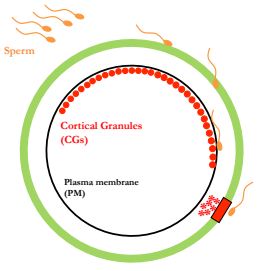
e-mail: bfeldman@mail.nih.gov

Sample conclusion slide – The Fertilization Process

1. Fertilizing sperm encounter ovulated eggs in the oviduct
2. Sperm-egg recognition and binding
3. Zona penetration
4. Sperm fusion
5. Cortical granule exocytosis induces zona block to penetration and ZP2 cleavage: NO MORE SPERM BINDING

Sample conclusion slide – The Fertilization Process



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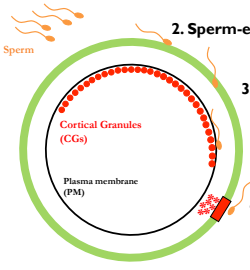

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